HLE Differences by Region in the U.S.

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Introduction

- Region is a commonly used control in U.S. health & aging research
- Little research specifies a meaning for it
- But several meanings possible
  - Could represent cultural differences
  - Could simply reflect known (or assumed) health differentials
- If so, current region and transitions between regions should be considered

Introduction, cont'd.

- We consider region of birth, current region, and transitions between, and we consider:
  - Total Life Expectancy
  - Health Life Expectancy
  - Disability Free Life Expectancy
- Expectations
  - Birth region more important than current
  - Movers and stayers differ, reflecting composite of selection and cultural differences

Data

- From NHANES and followups (NHEFS).
- Panel of 34k persons, 14k of whom were followed
- Use data from 1987 and 1992 waves
  - survivors only to 1987
  - final status must be known
  - region of birth, disability status, and health known
  - n=7,028, (6% missing on region; 11% on health)

Variables

- Age (5-yr groups, 45+, m=61.05, s.d.=12.5)
- Sex (Female=1, 65%)
- Race (Black=1, 12%, versus White)
- Married in ’87 (70%)
- Education (Years, m=11.8, s.d.=2.9)
- Self-Rated Health (0/1: 21% [10%-36%])
- Limitation (1+ ADL: 7% [2%-14%])
- Death (619; 12.1%)

Variables, cont'd

\ 92 87 \	Healthy	Not Healthy	Not Limited	Limited	Dead
Healthy (79%)	4669 (84%)	585 (10%)	--	--	318 (6%)
Not Healthy	455 (31%)	700 (48%)	--	--	301 (21%)
Not Limited	--	--	5514 (84%)	509 (8%)	509 (8%)
Limited (7%)	--	--	181 (36%)	205 (41%)	110 (22%)

Region

- 71.3% never move
  - 23.4% South
  - 17.9% Northeast
  - 15.9% Midwest
  - 14.1% West
- 22.9% move once (birth-1971)
  - (12 patterns)
- Only 101 of 256 patterns seen; 16 capture 94.2% of cases

Region, cont'd

in '87→ Start ↓	South	Northeast	Midwest	West
South	23.3%	1.6%	3.2%	1.2%
Northeast	1.9%	17.9%	.7%	1.2%
Midwest	1.4%	.6%	15.9%	3.2%
West	3.8%	.2%	4.1%	14.1s%

Analytic Strategy: Bayesian MSLT

1. Estimate bivariate probit model using Gibbs sampling (generates *m* sets of parameters)

2. Use Gibbs sampling output to construct *m* life tables

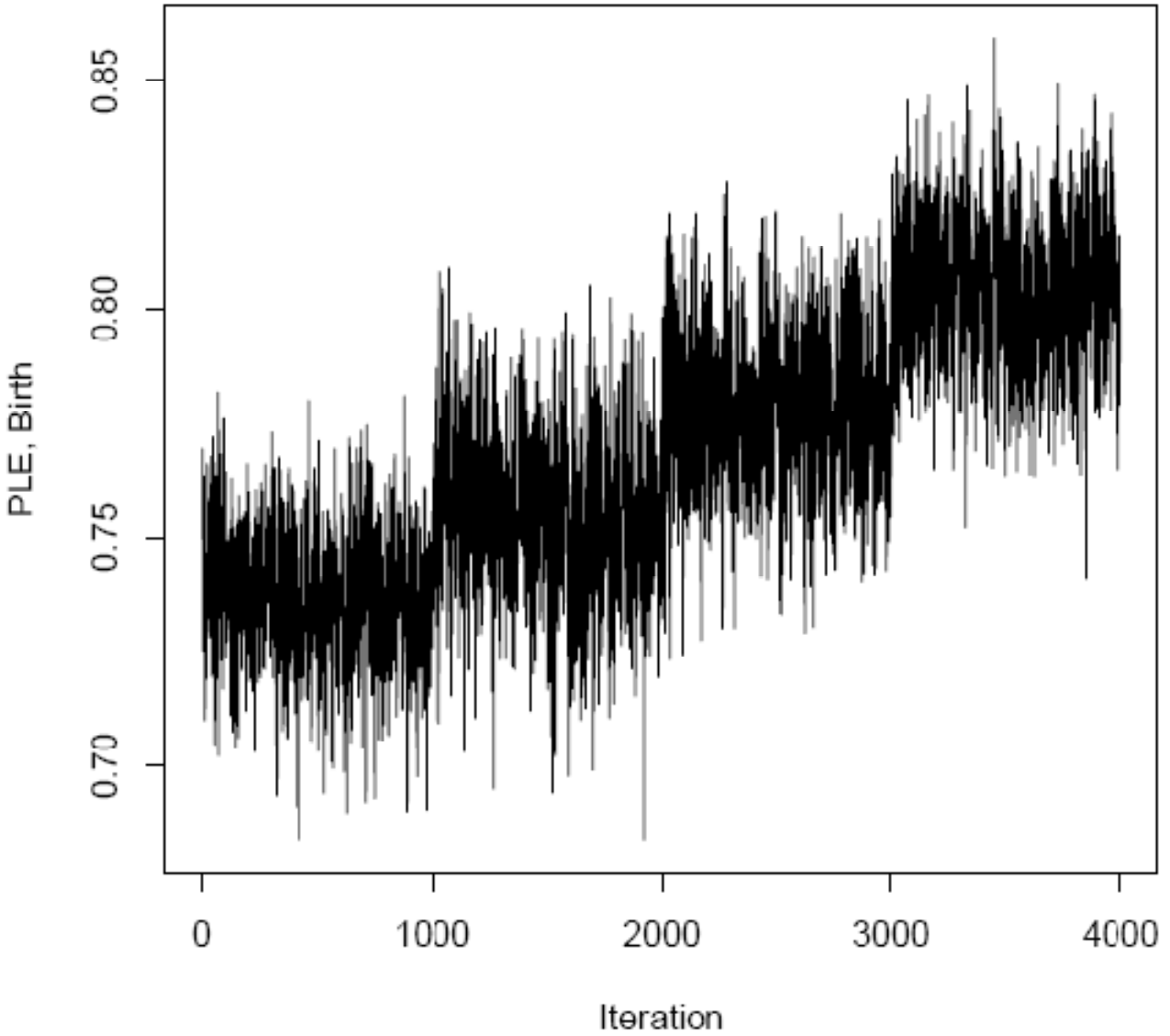
3. Summarize results using regression/plots

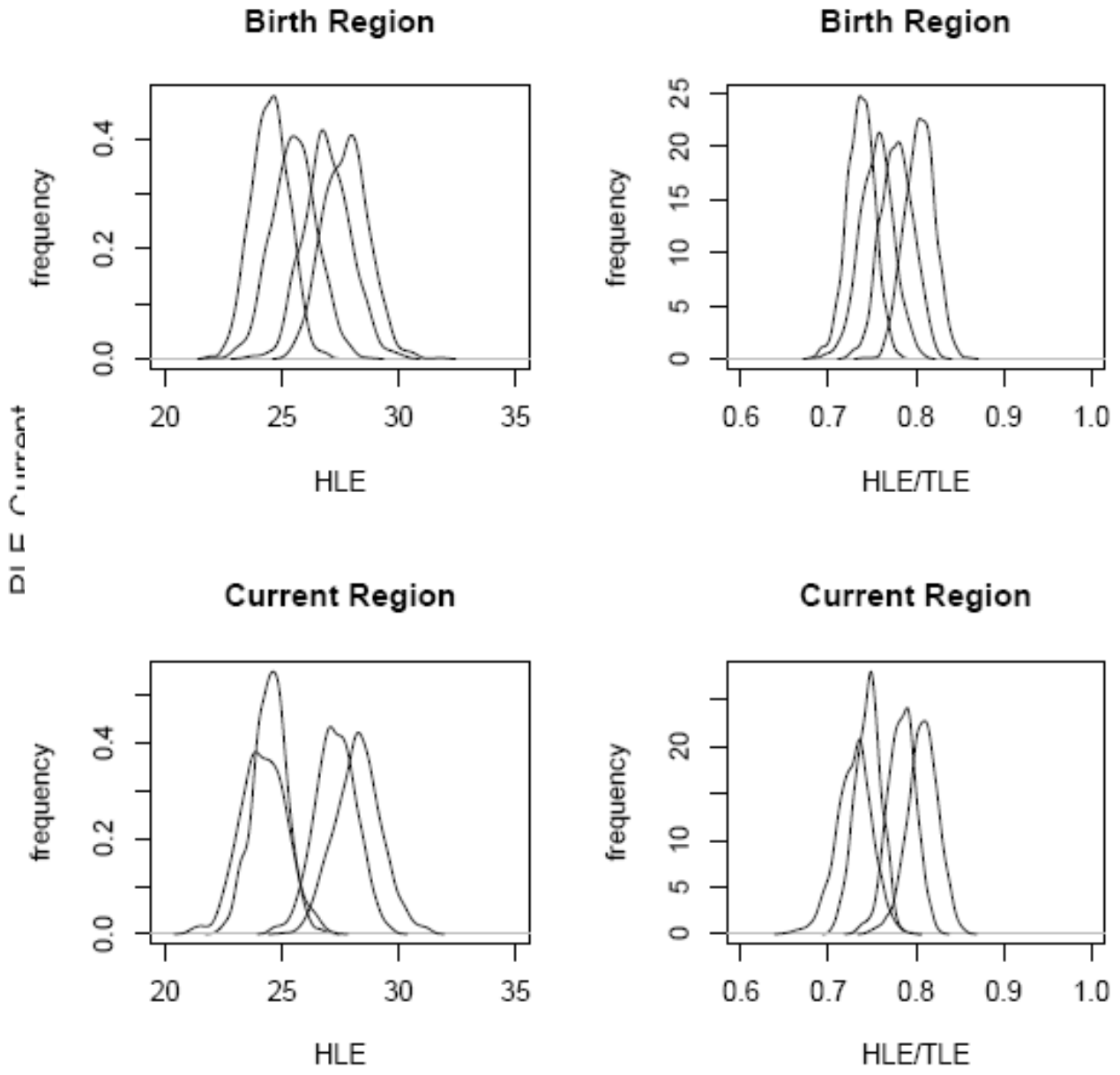
1. Estimate Bivariate Probit

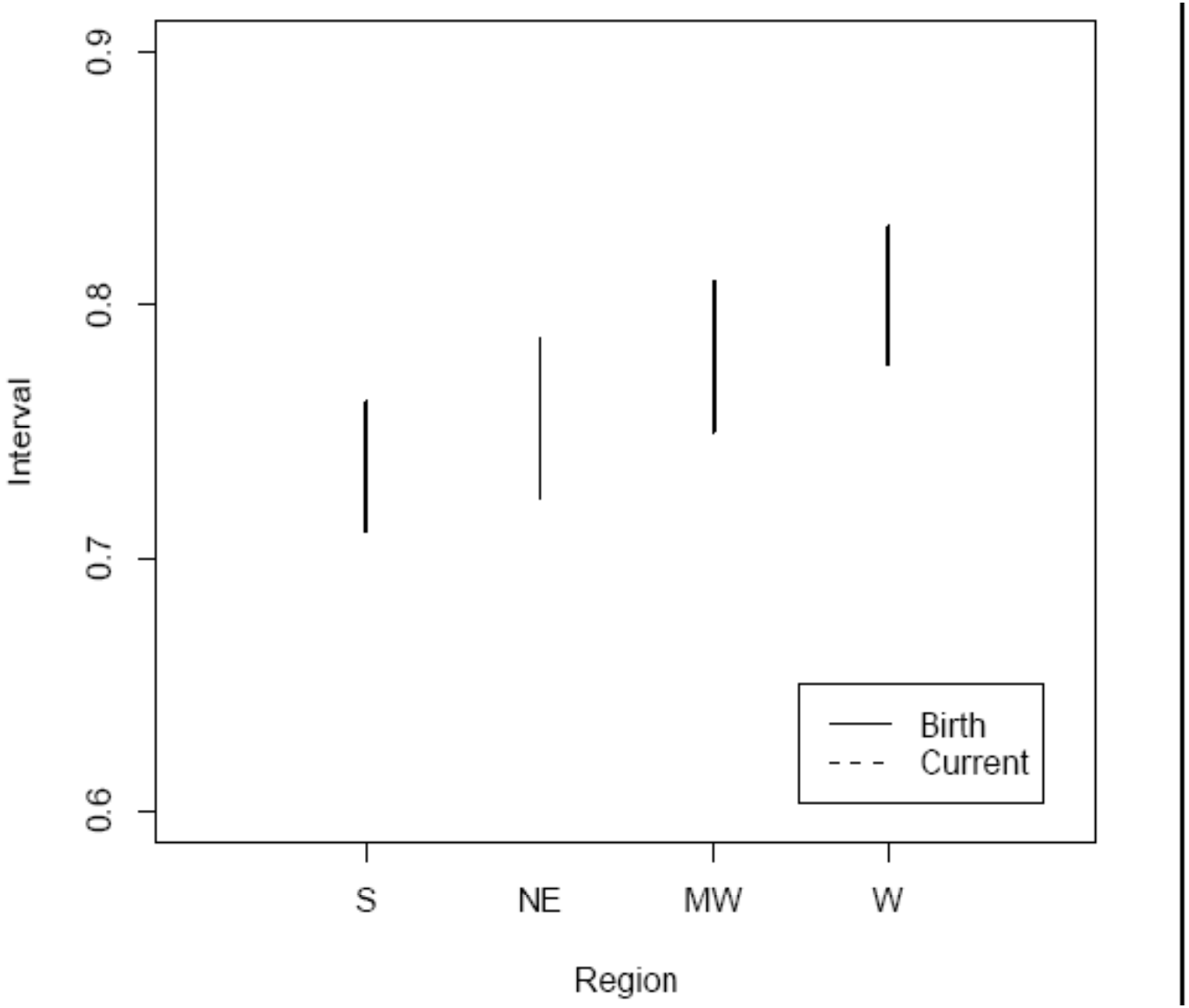
- Outcome is two-dimensional dichotomous
  - Healthy/not + Dead/not by wave 2
- Model has unlimited covariates, including
  - Age, starting state, female, black, education, marital status, 16 regional dummy variables

2. Use Output to Generate MSLTs

- Select a covariate profile
- Generate predicted scores from Gibbs sample parameters + covariate values
- Transform predicted scores into transition probabilities (matrices)
- Compute life tables


PLE, Birth
0.70
0.75
0.80
0.85
0
1000
2000
3000
4000
Iteration


Birth Region
frequency
0.0
0.2
0.4
20
25
30
35
HLE
Birth Region
frequency
0
5
10
15
20
25
0.6
0.7
0.8
0.9
1.0
HLE/TLE
Current Region
frequency
0.0
0.2
0.4
20
25
30
35
HLE
Current Region
frequency
0
5
10
20
0.6
0.7
0.8
0.9
1.0
HLE/TLE


Interval
0.6
0.7
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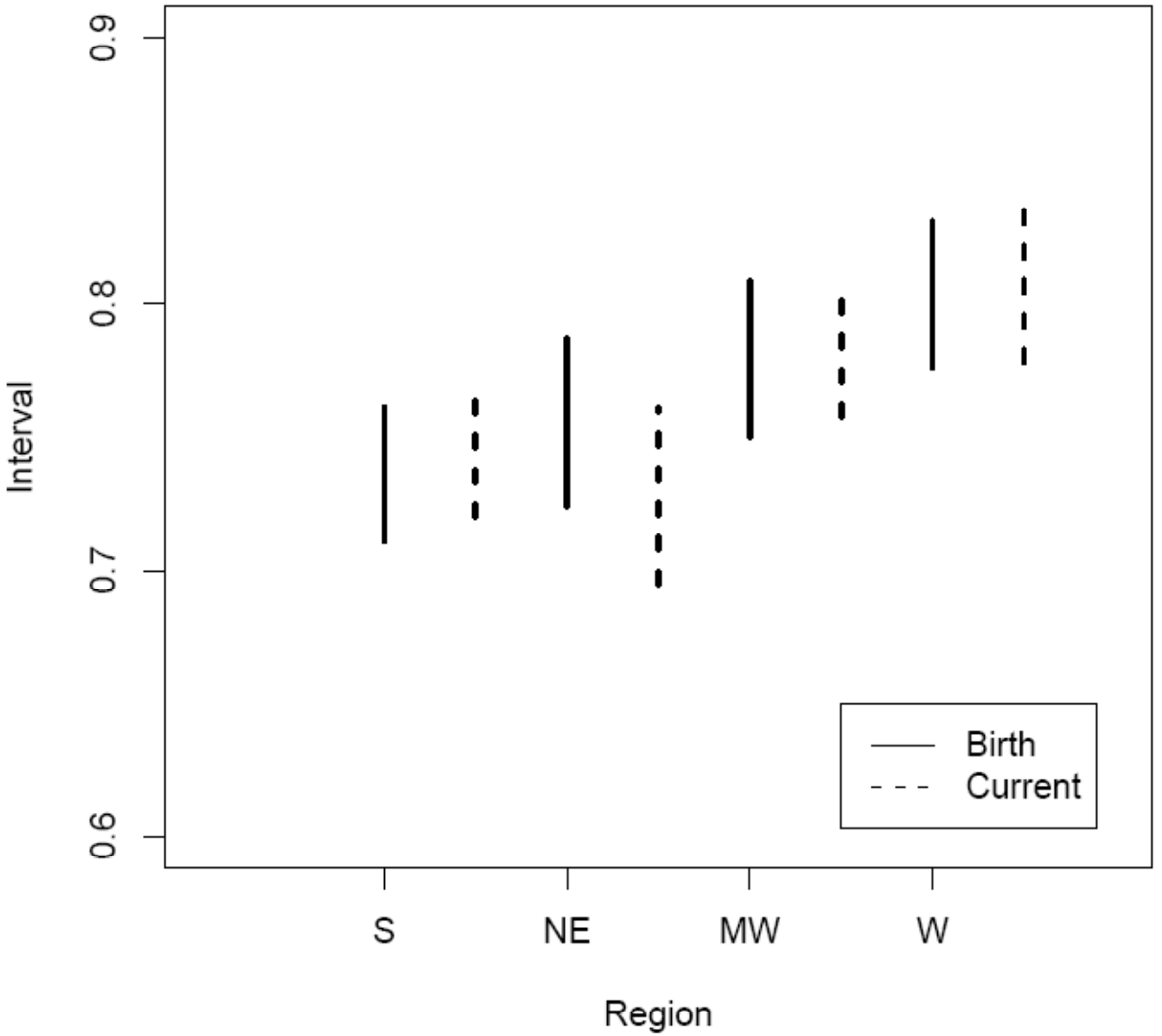
S
NE
MW
W
Region
Birth
Current


0.9
0.8
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Interval
S
NE
MW
W
Region
Birth
Current

1.0
0.8
0.6
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MW
SNE
SW
NEW
MWW
WMW

1.0
0.8
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SNE
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NEW
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1.0
0.8
0.6
0.4
0.2
0.0
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MW
SNE
SW
NEW
MWW
WMW

Conclusions

- If using one region measure, don't use "South"
- Little difference between birth region and current region
  - But current region suggests use West or Northeast
- Variation among regional movements is real, but requires a very large dataset